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## UNITED STATES DEPARTMENT OF AGRICULTURE BUREAU OF PUBLIC ROADS DIVISION OF AGRICULTURAL ENGINEERING

S. H. McCRORY, CHIEF.

No September issue.

MONTHLY NEWS LETTER

Washington, D. C., October 20, 1926.

No News Letter was issued in September Hence this Letter covers, in part, the activities of the past two months.

MR. McCrory Left Washington September 20 for a trip to the Middle West. He first visited lowa City for a conference with Mr. Yarnell and Professors Woodward and Nagler in connection with the experiments in Progress there relating to flow around bends and piers. From lowa City He proceeded to Manhattan, Kansas and thence to Stillwater, Oklahoma, for a conference with State College people regarding the investigation of the combine for harvesting grain sorghums. Mr. McCrory returned to Washington September 27.

DURING SEPTEMBER GEORGE A. BOYD SPENT MOST OF THE MONTH ON A DEMONSTRATION AND CONFERENCE TRIP IN THE SOUTHERN TERRITORY IN THE INTERESTS
OF THE DISTRIBUTION OF PYROTOL. HE VISITED GEORGIA, ALABAMA, MISSISSIPPI,
LOUISIANA, ARKANSAS AND MISSOURI. HE REPORTS INCREASING INTEREST IN THE
DISTRIBUTION OF PYROTOL. THIS INCREASE IS ESPECIALLY APPARENT SINCE THE
ENLARGEMENT OF THE FIELD IN USE OF PYROTOL TO INCLUDE ALL AGRICULTURAL
WORK. PRIOR TO THIS FISCAL YEAR THE USE OF PYROTOL BY FARMERS WAS LIMITED
BY LAW TO CLEARING LAND OF STUMPS AND STONES.

MR. BARTEL HAS SENT TO WASHINGTON HIS SECOND PROGRESS REPORT ON THE EXPERIMENTAL SOIL EROSION PLANT ON THE COLLEGE FARM AT RALEIGH. IN THIS EXPERIMENT, RUN-OFF AND ERODED SOIL IS ACTUALLY MEASURED FROM EXPERIMENTAL TRACTS PLANTED TO DIFFERENT CROPS.

ABOUT THE MIDDLE OF SEPTEMBER W. D. ELLISON WAS MOVED FROM MCGEHEE, ARKANSAS, TO CAPE GIRARDEAU, MISSOURI, TO ASSIST MR. RAMSER IN WORKING UP THE RESULTS OF THE LAST SEVERAL YEARS! WORK ON RUN-OFF. IT IS BELIEVED THAT THE RECORDS SECURED IN SOUTHEAST ARKANSAS ARE SUFFICIENT TO ESTABLISH THE RUN-OFF FACTORS AND THE ROUGHNESS COEFFICIENTS FROM THE CLASS OF LAND AND IN THE DITCHES THAT ARE TYPICAL OF THAT AREA. IT IS PROPOSED A LITTLE LATER TO TAKE UP THE INVESTIGATION OF THE RUN-OFF AND FLOW FACTORS IN NORTHERN INDIANA.

HEAVY RAINS DURING THE LAST MONTH IN ILLINOIS HAVE ENABLED

MR. NORTON TO SECURE VERY VALUABLE RUN-OFF MEASUREMENTS. MANY OF THE

STREAMS ROSE TO UNUSUAL HEIGHTS, THUS YIELDING VALUABLE DATA. MR. SHAFER

WHO IS STUDYING THE MATTER OF DRAINAGE PUMPING IN THE ILLINOIS RIVER

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## MONTALY NEWS LETTER

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VALLEY REPORTS FLOODS OF A RATHER DISASTROUS NATURE AND THE BREAKING OF SEVERAL LEVEES.

ON OCTOBER 6 R. D. MARSDEN BEGAN A TRIP THROUGH THE SOUTHEASTERN STATES, HAVING FOR HIS OBJECT THE SECURING OF INFORMATION RELATING TO THE PROGRESS — OR LACK OF PROGRESS AS THE CASE MAY BE — IN PUTTING UNDER CULTIVATION THE LAND INCLUDED IN ORGANIZED DRAINAGE DISTRICTS. THIS IS A PROJECT CARRIED ON IN COOPERATION WITH THE BUREAU OF AGRICULTURAL ECONOMICS. EARLIER IN THE YEAR MR. MARSDEN AND MR. TEELE OF THE BUREAU OF AGRICULTURAL ECONOMICS, COVERED THE MISSISSIPPI VALLEY STATES ON THIS SAME MISSION.

IT HAS DEVOLVED UPON THIS DIVISION TO MAKE A COMPLETE SURVEY OF A TRACT OF 1,000 ACRES (INCLUDED IN A LARGE NUMBER OF OWNERSHIPS) PURCHASED RECENTLY BY THE BUREAU OF ANIMAL INDUSTRY AS AN EXTENSION OF THE BELTSVILLE, (MD.) FARM. L. A. JONES IS IN CHARGE OF THIS SURVEY.

THE MANUSCRIPT FOR THE SECOND IN DR. FORTIER'S SERIES OF DUTY OF WATER BULLETINS, ENTITLED "IRRIGATION REQUIREMENTS OF THE ARID AND SEMI-ARID LANDS OF THE MISSOURI AND ARKANSAS RIVER, BASINS," HAS BEEN RECEIVED BY THE WASHINGTON OFFICE.

- W. W. McLaughlin visited points in Washington, Idaho, Montana, Oregon and Utah during the month, conferring with Messrs. Jessup, Mark and Winsor at their field stations and with members of cooperating agencies.
- D. W. BLOODGOOD STATES THAT UNUSUALLY HEAVY PRECIPITATION RUINED THE LAST CUT OF ALFALFA ON THE EXPERIMENTAL PLOTS AT THE NEW MEXICO EXPERIMENT STATION, RENDERING THE WEIGHT DATA OF VERY LITTLE VALUE. VERY LITTLE DAMAGE WAS DONE TO THE COTTON. FUNDS WITH WHICH THE STATE ENGINEER HAD EXPECTED TO COOPERATE ON THE ESTANCIA PROJECT, AND WHICH HAVE BEEN TIED UP BY LITIGATION FOR MANY MONTHS, HAVE NOW BEEN RELEASED BY COURT ACTION AND ARE AVAILABLE FOR THE COOPERATIVE WORK.
- A. L. Fellows reports that a scheme is being promoted near Sidney, Nebraska, with a view to irrigating an immense tract of land, the promoters stating that there is an underground river in that locality capable of irrigating hundreds of thousands of acres. Mr. Fellows feels that the underground supply might, with careful handling, be sufficient for an area of from 5,000 to 15,000 acres.
- R. G. HEMPHILL HAS CLOSED HIS FIELD INVESTIGATION OF THE DUTY OF WATER FOR RICE AT BEAUMONT, TEXAS. THE ASSISTANT IN CHARGE OF FIELD WORK, R. G. WEST, IS PREPARING THE REPORT OF THE SEASON'S WORK.
- L. T. JESSUP IS PREPARING AN EXPERIMENTAL TANK AT YAKIMA, WASH., FOR THE PURPOSE OF STUDYING THE EFFECT OF DRAINS ON THE POSITION OF THE WATER TABLE.

On the invitation of Dean Iddings, University of Idaho, James C. Mark attended a meeting at Boise of an Agricultural Economic Committee composed of State and Federal Representatives.

TALLEY REPUBLIE ALDODS OF A RATHER DISPAYROUS PATURE AND THE PARACULT OF REVERAL LEVELS.

ON DOTORES 6 R. D. MADROEN BLIAN A TRIP IMAGULE THE EQUINICATION BELATING TO THE BEATING OF INFORMATION BELATING TO THE PRODUCT OF SECURISH OF A SECURIOR OF A SECURIVAL ELONOMICS. SANLIES ON THE SURE OF THE BURGAL OF A SECURIVAL ELONOMICS. SANLIES IN THE BURGAL OF A SECURIVAL ELONOMICS. SANLIES IN THE VERNE WISHING.

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W. W. McLaughelin virited foreits in Washington, Idaho, Montana, Ortoon and Utah doring the month, conference with Messes, Jessue, Mare and Himson at Their Field Stations and with Members of Coortering Asknows.

A. L. FILLOWS REPORTS THAT A SCHEME TO BEING RECORDED BLAR SECRET, WITH A VIEW TO INCIDATING AND INCIDENT OF LAND, THE FROM MOTERS STATING THAT THERE IS AN UNCERTABOUND BIVER IN THAT LOCALITY CARBULE TO THE COLUMN FILLOWS FREE THAT THE COLUMN FILLOWS FREE THAT THE COLUMN FREE THAT THE COLUMN SUPPLY WHICH IS AN AREA OF FROM 5,000 TO 15,000 ACRES.

R. G. HEMPHILL HAT GLOSED HIS FICLD INVESTIGATION OF THE DITY OF MATER FOR RICE AT BEAUMOUT, TEXAS. THE ASSISTANT IN CHARGE OF FIELD WORK, R. G. WEST, IS PREPARING THE REPORT OF THE BEASUNIS WORK,

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ON THE INVITATION OF DEAN IDDINGS, UNIVERSITY OF IDAMO, JUNEAU D. MAIN ATTOMORY A VESTING AT BOISE OF AN ACRICULTURAL RECOGNISE CONSITTEE CONFITTEE OF STATE AND PEDESAL REPRESENTATIVES.

R. L. PARSHALL AND CARL ROHWER CHECKED A 15-FOOT FRANCIS WEIR AT THE BELLVUE LABORATORY AGAINST STANDARDIZED 4-FOOT RECTANGULAR AND 4-FOOT CIPOLLETTI WEIRS SET SIDE BY SIDE, AND FOUND THAT FOR THE HEADS TESTED THE FRANCIS FORMULA GIVES DISCHARGES WHICH AGREE WITHIN I PER CENT OF THE DISCHARGE MEASURED OVER THE STANDARDIZED WEIRS EXCEPT FOR HEADS LESS THAN 0.10 FOOT.

Messrs. Parshall and Rohwer Report that the copper-lined reservoir at Fort Collins, Colo., hydraulic Laboratory was virtually put in commission on the 15th of the month, since which time evaporation observations have been made at six-hour intervals. These observations are being made on four different types of tanks which, in addition to the large copper-lined reservoir, consists of a U.S.G.S. floating pan, a Class A Weather Bureau Land pan, and a Colorado type land pan.

Fred C. Scobey has completed the collection of data for a bulletin on the Flow of Water in Flumes. The data covered the unusual conditions of flow; particularly at velocities near the critical velocity, where the hydraulic jump is involved. At velocities higher than the critical no jump is involved if the water plunges over a brink at the outlet into a pool. However, if the water impinges into the canal water below the flume, experimental studies show that a maximum of 85 per cent of the difference in velocity—heads could be recovered in the jump. This maximum, of course, is in excess of the amount that should be used on computations before construction.

W. L. STOCKWELL JR., IN CONNECTION WITH HIS DRAINAGE AND IRRIGATION INVESTIGATIONS, HAS MADE A SURVEY OF A RESERVOIR SITE IN THE MEADOW VALLEY WASH IN SOUTHERN NEVADA FOR FLOOD CONTROL AND STORAGE OF FLOOD WATERS. THE CAPACITY AS DETERMINED BY THE PRELIMINARY WORK IS 10,286 ACRE-FEET. THE APPROXIMATE COST OF A 25-FOOT DAM ACROSS THE CHANNEL WILL BE \$37,000.

IN REPORTING ON THE COOPERATIVE DUTY OF WATER WORK IN SAN DIEGO COUNTY, CALIF., COLIN A. TAYLOR STATES THAT RECORDS ON THE CITRUS GROVES SHOW THAT THE FIRST FOOT OF SOIL HAS THE MAJOR PORTION OF THE ROOT SYSTEM AND THAT IT IS SPREAD OUT QUITE GENERALLY INTO THE SPACE BETWEEN THE TREES. THE SECOND AND THIRD FEET IMMEDIATELY UNDER THE TREES ALSO GENERALLY SHOW A GOOD ROOT DEVELOPMENT, BUT THIS VARIES WITH THE AGE AND CONDITION OF THE TREES. NONE OF THE IRRIGATION METHODS UNDER OBSERVATION HAS CONSISTENTLY WET ALL OF THE ROOT ZONE IN NEED OF WATER. THE FURROW SYSTEM EMPLOYED WET BETWEEN 25 AND 50 PER CENT OF THE ROOT ZONE, WHILE THE SPRINKLER SYSTEMS DO BETTER BUT STILL LEAVE AREAS OF SHALLOW PENETRATION, PARTICULARLY UNDER TREES DISTANT FROM THE SPRINKLERS. THE SPRINKLER SYSTEM COMBINED WITH ONE OR TWO BASIN IRRIGATIONS DIRECTLY UNDER THE TREES WOULD, IN THE OPINION OF MR. TAYLOR, BE THE BEST MEANS OF REACHING ALL OF THE ROOTS WITH THE LEAST AMOUNT OF WATER.

L. M. Winsor has made a personal inspection of every flood and gravel control structure installed under his direction in Utah and finds that the structures have been 100 per cent efficient in controlling floods and in holding back sand, gravel, and rocks which formerly filled canals and covered valuable lands in times of flood and during the period of spring high water.

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RELLANDE LABORATORY AGAINGE STRINGARDITED REFOOT REGISHOULAR AND REFOOT FRANCIS WEER AT THE SECLENCIES WEERS AND REFOOT FRANCIS WEEKS AND REFOOT FRANCIS FOR THE MEASON FLOTED THE FRANCIS FORMULA GIVES CISCHARGES WHICH ADDEE WITHIN L FER CEVE OF THE OLD CHARGE MEASURED OVER THE STANDARDITED WE'RE ENGERT FOR HEADE LEND, THAN O, TO FOOT.

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FREE CLEW OF MATER IN FLURES. THE DATA COVERED THE UNULAS TONGITIEUR OF FLOWING INTERNAL TONGITIEUR OF FLOWING THE PARTY CLEARLY AT VELOCITIES WICHER THAN THE CRITICAL VELOCITY, WHERE THE HYERACLIC LUMBS IS INVOLVED IN THE WATER PLUNGES OVER A BRINK AT THE OUTEST INTO A RUBL. HOWEVER, IF THE WATER IMPINGES INTO THE CAMER BELOW THE FLUME; EXPERIMENTAL CTUDIES SHOW THAT A MAXIMUM OF SS PER CHAIT OF THE DIFFERENCE IN VELOCITY-HEADS COULD BE RECOVERED IN THE JUMP. THAT AND JUMP. THAT WAS MUCH THAT A SHOULD BE USED ON COMMUTATIONS RECORD CONSTRUCTION.

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LA M. WINSON HAR MADE A PERSONAL INSPECTION OF EVERY FLOOD AND CRAVEL CONTROL STRUCTURES HAVE SEEN 100 PER CENT EFFICIENT IN CONTROLLING FLOODS AND IN MOLDING BACK BAND, DRAVEL, AND ROOKS WHICH FERMERLY FILLED CANALS AND DOVERED VALUABLE LANDS IN THESE OF FLOOD AND DURING THE PERIOD OF CRIMER WATER.

MR. WINSOR STATES FURTHER THAT THE PROGRAM OF CONSOLIDATION BEGUN LAST YEAR IN THE WOODRUFF DISTRICT IN RICH COUNTY, UTAH, HAS BEEN COMPLETED, 15 SEPARATE UNITS FOR THE DISTRIBUTION OF THE WATERS OF WOODRUFF CREEK HAVING BEEN COMBINED INTO ONE MUTUAL COMPANY. A NEW RESERVOIR IS NOW UNDER WAY WHICH WILL HOLD ENOUGH WATER TO PROVIDE ONE LATE IRRIGATION.

C. D. KINSMAN AND W. R. HUMPHRIES WHO HAVE BEEN MAKING A FIELD STUDY OF THE COMBINE HORVESTER HAVE RETURNED TO WASHINGTON AND THE WORK OF COMPILING THE RESULTS IS NOW UNDER WAY. W. M. HURST WHO ALSO HAS BEEN ENGAGED ALL SUMMER ON THIS INVESTIGATION, IS NOW IN KANSAS IN CONNECTION WITH THE EXTENSION OF THE COMBINE STUDY TO INCLUDE GRAIN SORGHUMS, THIS LATTER WORK BEING CARRIED ON UNDER A COOPERATIVE AGREEMENT WITH KANSAS, OKLAHOMA, AND TEXAS, AGRICULTURAL COLLEGES AND THE BUREAUSOF PLANT INDUSTRY AND AGRICULTURAL ECONOMICS.

THE NEW GOVERNMENT BUILDING PROGRAM IN WASHINGTON INVOLVES THE MOVING OF CENTER MARKET AND THIS DIVISION IS ASSISTING IN THE MAKING OF PRELIMINARY ROUGH ESTIMATES OF THE TIME REQUIRED AND COST OF MOVING THE MARKET TO CERTAIN OTHER PROPOSED LOCATIONS WITHIN THE CITY.

ARRANGEMENTS ARE BEING MADE FOR A COOPERATIVE INVESTIGATION OF A SWEET AND WHITE POTATO STORAGE HOUSE ERECTED IN ACCOMAC COUNTY, VA., FROM PLANS PREPARED IN THE DIVISION. THE BUREAU OF PLANT INDUSTRY AND THE VIRGINIA TRUCK EXPERIMENT STATION ARE THE COOPERATING AGENCIES. THE PURPOSE OF THE STUDY IS TO DETERMINE THE EFFECTIVENESS OF THE VENTILATING SYSTEM AND TO DEMONSTRATE THE SUPERIORITY OF THE DESIGN AS COMPARED WITH THE TYPE OF STORAGE HOUSES COMMON TO THAT LOCALITY.

T.A.H. MILLER RECENTLY INSPECTED A NUMBER OF FARM BUILDINGS AND A CHURCH NEAR SUMTER, S. C., CONSTRUCTED OF RAMMED EARTH, SOME OF WHICH WERE ERECTED MORE THAN 100 YEARS AGO. A MIMEOGRAPHED REPORT WILL BE ISSUED DESCRIBING THIS INTERESTING GROUP OF BUILDINGS. FARMERS! BULLETIN No. 1500 \*\*RAMMED EARTH WALLS FOR BUILDINGS\*\* HAS JUST BEEN ISSUED.

A. H. Senner has completed the manuscript for a Farmers! Bulletin on "The Domestic Oil Burner".

A BIBLIOGRAPHY RELATING TO SOIL MOISTURE HAS BEEN PREPARED BY
F. J. VEIHMEYER AND GUY ERVIN FOR PUBLICATION AS A DEPARTMENT BULLETIN.

- J. T. Bowen attended the Dairy Industries Exposition held at Detroit October 6 to 14, inclusive. Mr. Bowen is preparing a paper entitled "The Application of Refrigeration to the Dairy Industry", for the Fifth International Congress of Refrigeration to be held in Rome next September.
- G. M. WARREN RECENTLY MADE A STUDY OF POSSIBLE METHODS OF OBTAINING A DOMESTIC WATER SUPPLY AT POINT HOPE, ALASKA, A STRIP OF LOW-LYING LAND PROJECTING SOME MILES INTO THE POLAR SEA.

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